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ANNUAL REPORT

OF

THE ROYAL BOTANIC GARDEN, CALCUTTA, 1895-96.

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ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1895-96

No. 16G., dated Royal Botanic Garden, Sibpur, the 12th May 1896.

From—BRIGADE-SURGEON-LIEUTENANT-COLONEL GEORGE KING, M.B., LL.D., F.L.S., F.R.S., C.I.E., Superintendent, Royal Botanic Garden, Calcutta,

To—The Secretary to the Government of Bengal, Financial Department.

I HAVE the honour herewith to submit the 109th Annual Report of the Royal Botanic Garden, Calcutta.

ANNUAL REPORT OF THE ROYAL BOTANIC GARDEN, CALCUTTA, FOR THE YEAR 1895-96

THE weather of the official year 1895-96 was remarkable for the great dryness of the months from October to March. Not only did the rainy season end prematurely, but the showers which are not unusual about the beginning of January entirely failed this year, and there was not a single storm from the north-west The result of this excessive dryness on the plants growing out of doors has been disastrous. In spite of all efforts in the way of artificial watering, many small plants have died; and many trees, even of large size, will be disfigured by the loss of branches which have withered. The excessive dryness of the air during the few weeks when the majority of the orchids came into bloom had the double effect of reducing the size of these beautiful flowers, and of hastening their withering. The flowering-trees out of doors were also stimulated into putting out unusually large numbers of blossoms of smaller size than usual. The solitary benefit derived from the drought was that the water in the Garden lakes fell so low that it was possible, by cutting some of them off from the supply of water lifted from the river by the steam-pump, to run them quite dry, and thus to obtain from their beds a quantity of earth which will be of great use in raising the levels of numerous roads which are much in want of being heightened. Chief amongst such roads is the avenue leading from the river entrance to the Banyan tree. This, which is more than a third of a mile long, is one of the most prominent in the Garden. Towards the middle of it the level sinks, so that the roadway is below the surrounding ground. This depression not only produces an unpleasing effect, but it forms a cup in which water freely collects during the rains. By means of the earth recovered from the lakes near this road, I hope, during the year now entered upon, greatly to improve this avenue, as well as the ground on each side of it. During the year the Dyer and Falconer Avenues had their levels raised and were repaired, the soling bricks and burnt-brick metal required for the purpose having as usual been made within the Garden. With the relaying of the two avenues just mentioned, the eastern half of the Garden has now been well supplied with good roads. Much, however, still remains to be done in the western half. The Banyan avenue will probably be taken in hand during the current year, but it will not be possible to do more. The Roxburgh Avenue, which is in very bad condition during the greater part of its length; the Thomson Avenue, which is almost unfit for wheeled traffic; and various shorter roads will have to lie over for future occasions when special grants of money can be spared. During the cold weather the new road running from the Shalimar Point to the garden was opened for traffic by the Public Works Department; and, with its opening, people coming to the Garden by land began to enter it by a gate which was previously but little used. Anticipating this change, I had for some years back been improving the Garden in the neighbourhood of that gate. During the current year the final touches were put upon that part of the Garden, and it is now one of the prettiest spots within its boundaries. The gate itself is however rather mean and small, and a larger one ought to be provided as soon as funds permit. A year or two ago the platform on which Kyd's Monument stands was paved with marble, Sir Charles Elliott having made a special grant of money for the purpose. Last year,

by a similar grant, marble steps to the platform were provided in supersession of the former cemented ones. No buildings were erected in the Garden during the year. I had hoped to have been able to build a new plant-house in the Nursery, but funds were not sufficient. Such a house ought to be put in hand as soon as possible. A glass-roofed house for the display of ferns is still also one of the desiderata of the Garden. Few ferns thrive well in the grass-roofed conservatories which have proved so perfectly suitable for orchids, palms, and other plants. In consequence of there not being a glazed conservatory, the public never see the Garden fern collection, which has to be kept in nursery houses near the Curator's quarters. Towards the end of the official year much was done towards thinning the large area planted with trees to the south-west of the great Banyan. During the year an interesting addition to the Garden trees was made in the shape of a rooted cutting of the sacred *Bo* tree of the temple at Budh Gaya, under a predecessor of which Sakya Muni, the founder of the Buddhistic faith, lived and taught. This interesting historic and religious relic was presented by Mr. G. A. Grierson, PH.D., lately Magistrate of Howrah. It has been planted on an island in the large lake near the big Banyan, from which, when it grows up, it will be well seen, and at the same time it will not be easily accessible.

2. *Economic plants.*—At the request of the Reporter on Economic Products to the Government of India, patches of two species of *Sida* were cultivated in the Garden, with the view of testing the value of their fibres for weaving and cordage. The crops grown on these patches were made over to the officer just mentioned. At his request also quantities of young plants of *Adhatoda Vasica* were prepared in the nurseries for issue to tea-planters, a decoction of the leaves of this plant having a popular reputation as a powerful insecticide. A few experiments were made in the nurseries by the Curator, Mr. R. L. Proudlock, with the view of testing the merits of this decoction. The results, however, were of a somewhat doubtful nature. The demands for *rheea* plants were less numerous than in former years, and the distribution during the year was proportionately small. Many hundreds of fruit and timber trees were issued to public officers in all parts of the Province. The Director of Land Records and Agriculture, having been for some time desirous of obtaining a botanical report on the various races of wheat grown in Bengal, and being unable to supply adequate material for a study of the subject, it was suggested that a portion of the Sibpur Experimental Farm should be devoted during the cold weather of 1895-96 to raising wheat from samples of seed supplied from the various wheat-growing districts. This suggestion was acceded to by Mr. Macpherson, and Dr. Prain has during the cold season made observations on the samples of wheat grown in the plot of ground thus placed at his disposal. His report on the races grown, and on their relationship to the names they bear in the different districts, will be in the hands of the Director of Land Records and Agriculture at an early date.

3. *Herbarium.*—Work in the Herbarium was carried on with vigour; and during the year 17,403 specimens were received, while 11,093 carefully-named specimens of Indian plants were issued to various scientific institutions all over the world. The chief donors to the Herbarium were the Director of the Royal Garden, Kew, who contributed 1,974 specimens, and the Keeper of the Botanical Department of the Natural History Museum, London, who transmitted 1,129 duplicate specimens not required by that institution. From Dr. Engler, Conservator of the Royal Herbarium, Berlin, were received 512 specimens, and from the authorities of the Botanical Museum of the University of Vienna 1,000. Dr. Hans Schinz, Director of the Botanic Garden at Zurich, contributed 558; and the veteran Baron Von Müeller, Government Botanist in Melbourne, augmented his former munificent donations by 106 specimens during the past year. From American botanists large contributions were received; the Smithsonian Institution at Washington having sent 1,134 specimens, while Messrs. Pringle contributed 431 Mexican specimens, Mr. Heller 344, and Mr. Nash (of Columbia College, New York) 703 specimens. The Government of the Straits Settlements contributed 850 specimens, collected chiefly in Malacca; and Mr. E. H. Man, to whom for many previous years the Herbarium has been greatly beholden, sent 257 from the Andaman Islands. Among officers of the Indian Forest Department who made presentations,

there have to be mentioned Mr. J. Sykes Gamble, an old and valued contributor, who last year sent 456 specimens from Dehra Dun; Mr. W. A. Talbot, who sent 29 from Canara; Mr. R. L. Heinig, who sent 8 from the Sundarbans; and Mr. J. H. Lace, who sent 180 from the extreme North-West Himalaya. From Mr. J. A. Gammie, of the Government Cinchona Plantation, 172 specimens were received; while his son, Mr. G. A. Gammie, having made a tour in the Sundarbans with the Forest Officer of that Division, brought back 509 specimens jointly collected by Mr. Heinig and himself. To the Director of the Botanical Survey of Northern India (Mr. J. F. Duthie) the Herbarium is indebted for 669 specimens contributed during the year; while the late Mr. M. A. Lawson, Director of the Botanical Survey of Madras, sent 300 species from Travancore; and Mr. Marshall Woodrow, Director of the Bombay Botanical Survey, sent 34 species collected in the Deccan. A large number of specimens numbering 3,068 were brought in by native collectors working under the supervision of Mr. R. Pantling, of the Cinchona Plantation; while 578 were got from Abdul Kholil, a native collector working in the Shan Hills. The chief recipients of the named plants issued from the Herbarium during the year were the Director of the Herbarium at Kew; the Keeper of the Botanical Department at the British Museum; the Directors of the University Herbaria at Edinburgh, Aberdeen, Cambridge, Berlin, Zurich, Florence, Vienna, Utrecht, Leiden, Upsala, and Melbourne; the Directors of the Botanic Gardens at Buitenzorg (in Java), Singapore, Peradeniya Ceylon); M. C. De Candolle, Geneva; the Director of the Museum of the Jardin des Plantes, Paris; the Committee of the Smithsonian Institution, Washington; the Directors of the Botanical Survey of Northern India and of the Government Museum at Perak, of the College of Science, Poona, and of the Museum at Madras. Full lists of both receipts and issues will be found in Appendices V and VI of this report.

4. *Botanical publications.*—During the year the first part of the fifth volume of the *Annals of the Garden* was published. This part is occupied by detailed descriptions and figures of a hundred species of new and little known Indian orchids by the illustrious and veteran botanist, Sir Joseph D. Hooker. Sir Joseph has been engaged, as Government are aware, for the past five and twenty years on the preparation of a *Flora of British India.* In the course of his elaboration of the family of *Orchidaceæ* for that monumental work, he had at his disposal the whole of the materials of the Calcutta Herbarium, including the coloured drawings made by the Garden artists. These drawings, which have been accumulating since nearly the beginning of the century, were found by Sir Joseph so useful that he recommended the publication of a selection of them, and generously undertook to supply the descriptions himself. The result is his *Century of Indian Orchids,* which forms the first part of the fifth volume of our *Annals.* Towards the end of the year there was also published the first part of the sixth volume of these *Annals.* This part is occupied by an account of a very important research in vegetable physiology by Dr. D. D. Cunningham, Professor of Physiology in the Medical College, Calcutta. Dr. Cunningham devoted much of his leisure time during a period of several years to making observations of, and experiments connected with, the phenomena popularly known as *sleep* and *sensitivity* in plants. The results of these researches go to prove that the great majority, if not all, of the transient spontaneous movements of the higher vegetable organisms are dependent on purely physical processes. The memoir is a most exhaustive one, and is illustrated by drawings from Dr. Cunningham's own pencil. In the same part of the *Annals* is also included an account, by the same author, of a destructive vegetable blight. Dr. Prain, Curator of the Herbarium, contributed the following papers to various scientific journals:—*On* Milula, *a new genus of Liliaceæ, from the Eastern Himalaya* (in *Scientific Memoirs by Medical Officers of the Army of India*); *An account of the genus* Argemone (in the *Journal of Botany*); *A Revision of the genus* Chelidonium (in the *Bulletin de l' Herbier Boissier*); *Le genre* Microtoena (in the *Bulletin de la Societé Botanique de France*); *Noviciæ Indicæ,* IX and X, *some additional* Papaveraceæ and *some additional* Fumariaceæ (in the *Journal of the Asiatic Society of Bengal*); as well as some minor teratological and morphological communications to the same Society. Finally, in the *Journal of the Asiatic Society of Bengal,* I published the eighth portion of my *Materials for a Flora of the Malay Peninsula;* and in the same

journal appeared descriptions of thirty-three new species of Sikkim orchids, by Mr. R. Pantling, of the Cinchona Plantation, and myself.

5. *Library.*—A few books were added to the library, both by purchase and in exchange for copies of the Garden *Annals.*

6. *Interchange of plants and seeds.*—Full details of the issues and receipts of these will be found in Appendices I, II, III, and IV; the total issues having been 30,898 plants and 2,384 packets of seeds, and the receipts 14,342 plants and 1,177 packets of seeds. Amongst the collections of living plants received during the year the most interesting, from a botanical point of view, was that made in Assam by Dr. G. Watt, C.I.E., during a tour which he made in that province in connection with his researches into tea blights. Dr. Watt's collection consisted of no less than 1,215 plants, many of them of much interest.

7. *Lloyd Botanic Garden, Darjeeling.*—This Garden was worked during the whole year by the Curator, Mr. W. A. Kennedy, who, besides his duties in the Garden, has charge of the Shrubbery grounds and of the trees planted in various parts of the station. During the year Mr. Kennedy carried out various improvements on the roads and conservatories within the Garden. A very remarkable plant was added to the Darjeeling garden during the year, namely, a gigantic specimen of the beautiful Australian fern, *Todea barbara.* This plant was the personal gift of the distinguished botanist, Baron Ferdinand Von Müeller, K.C.M G., F.R.S., who for many years has been the highest authority on the botany of the Australian Colonies. Baron Von Müeller has in past times presented many valuable plants to the Calcutta Garden, but this, his latest gift, outrivals all his previous contributions. The *Todea* which now adorns the Darjeeling Garden was removed by the Baron, at his own expense, from a lonely valley far distant from his residence in Melbourne. It weighs upwards of half a ton, and ought, when it has had sufficient time to expand its leaves, to form a magnificent object.

8. The budget allotments of funds, both for the Calcutta and Darjeeling Gardens, were spent in full. The proceeds of the sale of surplus plants and seeds, amounting to Rs. 1,107-1-6 for the Calcutta Garden and to Rs. 1,014-8 for the Darjeeling Garden, were paid into the Government treasuries as usual.

9. Dr. Prain (who had been on furlough to Europe) returned to duty in June, and since then he has been in charge of the Herbarium. On 1st July Dr. Prain was appointed Professor of Botany in the Calcutta Medical College in place of myself, Government having allowed me to retire from that appointment. During Dr. Prain's absence the Herbarium work was carried on by Mr. G. A. Gammie (of the Cinchona Plantation), who on Dr. Prain's return reverted to his own appointment at Mungpoo. For the first eleven months of the year Mr. R. L. Proudlock held the appointment of Curator of the Calcutta Garden. Towards the end of January he was transferred to the Curatorship of the Government Garden at Ootacamund, and his place here was filled by Mr. Lane (the Assistant Curator), who returned during the year from Allahabad, where he had held an acting appointment. Mr. Lane's place on the staff of this Garden was in turn filled by Mr. Davies, who had previously been a probationer under the new scheme for providing a corps of gardeners for India. Mr. Proudlock's advancement to the Ootacamund Garden thus gave the means of giving well-merited promotion to Messrs. Lane and Davies, whose work during the year has been very satisfactory. The offices both of the Botanic Garden and of the Cinchona Plantation have, during the year, been in charge of Babu Gopal Chandra Datta, who has worked with his usual assiduity.

10. The usual appendices (six in number) which accompany this report give full details as to the distribution of plants, seeds, and Herbarium specimens.

APPENDIX I.

Statement showing Plants received from 1st April 1895 to 31st March 1896.

FROM WHOM RECEIVED.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Royal Gardens, Kew, London	2	3	190
Botanic Gardens, Durban, Natal ...	1	...	31
Ditto, Rockhampton, Australia ...	...	1	162
Ditto, Singapore	...	1	24
Ditto, Saharanpur	...	1	49
Ditto, Darjeeling	...	5	321
Ditto, Bangalore	...	.	20
Memorial Garden, Cawnpore	...	4	160
Zoological Garden, Calcutta	...	...	2
Baron Sir Ferdinand Von Müller, K.C.M.G., F.R.S., University of Melbourne.	...	...	1
Government Botanist, Melbourne, Australia...	...	...	3
Messrs. H. Low & Son, Clapton Nursery, London.	.	3	103
,, F. Sander & Co., St. Albans, England	...	4	345
Agri-Horticultural Society of India, Calcutta	...	...	167
Ditto ditto, Lahore ...	... .	2	7
Ditto ditto, Lucknow ...	...	5	159
Assistant Director of Land Records and Agriculture, Bengal, Calcutta.	...	...	6
Deputy Magistrate, 24-Parganas, Calcutta ...	...	...	4
H. J. Batten, Esq., Tavoy	1	2	464
J. Brown, Esq., Bally	...	...	6
Dr. Burton Brown, Kohima	...	...	2
C. Curtis, Esq., Penang	2	...	50
Giessliere, Esq.	...	...	134
G. A. Grierson, Esq., Howrah	...	...	1
G. Barton Groves, Esq., Abu, Rajputana ...	...	1	18
C. A. James, Esq , Shillong	...	1	20
A. Y. Kelson, Esq., Khidderpore ...	...	...	10
G. T. Lane, Esq., Allahabad		...	12
E. H. Man, Esq., C.I.E., Port Blair ...	2	...	282
C. Maries, Esq., Gwalior	...	1	15
J. Martin, Esq., Raipur	...	3	80
R. Pantling, Esq , Mungpoo	...	1	1,368
J. Parkes, Esq., Nimbong	...	5	1,669
Mr. J. C. Prazer, Burma	...	9	1,079
G. McD. Peche, Esq., Moulmein ...	...	8	1,378
J. S. Slater, Esq., Engineering College ...	...	...	40
T. J. Spooner, Esq., Kathiawar ...		...	2
Mrs. Sykes, Calcutta	...	...	6
C. H. Turner, Esq., Calcutta	...	...	29
G. Marshall Woodrow, Esq., College of Science, Poona.	...	1	51
Colonel Wylie, C.S.I., Khatmandu, Nipal ...	...	...	83
Babu B. K. Gulia, Pabna	...	...	4
,, J. N. Mookerjee, Khulna ...	...	...	3
,, Nisul Pathi, Cuttack	...	...	3
,, P. C. Chatterjee, Chundytolla ...	...	...	8
Budeen Nusker, thana Makooah ...	...	...	1
Nazir of Chittagong.	...	...	2
Dr. George Watt, M.B., C.M., LL.D., F.R.S., C.I.E., collected in Assam.	..	19	1,215
Dr. David Prain, M.A., M.B., collected at Jubbulpore, &c.	...	...	28
R. L. Proudlock, Esq., collected in North-West, Himalayas, &c	...	...	359
H. J. Davies, Esq., collected in Mungpoo, &c.	...	1	83

APPENDIX I—*concluded.*

To whom sent.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Abdul Kholil, collected in Fort Stedman ...	...	...	280
Unknown donors	...	4	603
T. J. Spooner, Esq., Resident Engineer, Dhola Junction, Dhola, Kathiawar.	...	...	2,700
The Superintendent, Victoria Gardens, Bombay	...	...	500
Total ...	8	85	14,342

APPENDIX II.

Statement showing Plants sent out from 1st April 1895 to 31st March 1896.

Royal Gardens, Kew, London ...	3	2	385
Botanic Garden, Ootacamund	...	3	70
Ditto, Darjeeling	...	3	52
Victoria Garden, Bombay	...	1	6
Belvedere Garden, Calcutta	...	...	8
Zoological Garden, Calcutta	...	...	276
Public Garden, Benares	...	6	150
Government Gardens, Nagpur	..	1	58
His Excellency the Viceroy's Bodyguard, Ballygunge.	...	...	600
Henry Bald, Esq., Goulburn Valley, Australia	1	...	24
The Right Hon'ble Sir Mountstuart Grant Duff, York House, Twickenham.	...	1	88
Herr Hermann Dietel, Graz, Germany ...	2	...	71
R. Hindmarsh, Esq., Killingworth House, Northumberland.	...	1	86
Messrs. Hugh Low & Son, Clapton Nursery, London.	...	14	1,320
Agri-Horticultural Society of India, Calcutta	...	...	40
Ditto ditto Garden, Lahore	...	7	73
Ditto ditto ditto, Lucknow	...	2	11
Chief Commissioner, Andamans ...	1	...	40
Deputy Commissioner, Dacca ...	...	...	208
Ditto, Tavoy	1	1	20
Ditto, Tezpur	...	6	152
Chief Commissariat Officer, Presidency Command, Calcutta.	...	...	1,000
Deputy Magistrate, 24-Parganas, Calcutta ...	...	...	3
Subdivisional Officer, Bihar	...	3	74
Chairman, Kishoreganj Municipality ...	...	4	100
Vice-Chairman, Municipality, Dinajpur ...	...	2	60
Ditto, ditto, Krishnagarh ...	...	8	200
Ditto, Town Committee, Cooch Behar	...	10	247
District Engineer, Backergunge, Barisal ...	...	15	350
Ditto, Bhagalpur	...	52	1,100
Ditto, Bogra	...	106	2,640
Ditto, Burdwan	...	4	100
Ditto, Dinajpur	...	28	700
Ditto, Hooghly	...	24	600
Ditto, Mymensingh ...	...	80	2,000
Ditto, Noakhali	...	14	350
Ditto, Rangpur	...	21	525
Ditto, 24-Parganas ...	...	...	305
Executive Engineer, Calcutta Workshop, Sibpur.	...	...	60

APPENDIX II—*continued.*

To whom sent.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Executive Engineer, Chota Nagpur Division, Ranchi	...	20	495
Resident Engineer, Dhola Junction, Kathiawar	...	6	153
Superintendent, Central Jail, Bhagalpur ...	...	9	60
Ditto, Presidency Jail, Calcutta ...	...	...	2,700
Ditto, Mysore State, Bangalore ...	.	1	100
Medical College Hospital, Calcutta ...	...	...	30
General Hospital, Calcutta	...	...	24
Howrah Hospital	...	...	50
St. Agnes' School, Howrah	...	..	100
St. Thomas's Church, Howrah	...	...	100
St. Vincent's Home, Kidderpore ...	...	...	100
Pratt Memorial School, Calcutta ...	...	...	110
Church Missionary Society, Calcutta ...	...	...	112
East Indian Railway, Giridih	...	2	30
Director, Department of Land Records and Agriculture, Rangoon.	...	1	20
Director, Forest School, Dehra Dun ...	...	1	5
Officiating District Judge, Faridpur ...	...	4	75
Commanding Officer of the S.S. *Clan Grant.*	...	...	14
Government Experimental Farm, Sibpur ...	...	...	25
Revd. T. H. Barnett, Howrah	...	...	15
Colonel Barr, C.S.I., Residency, Indore ...	...	1	6
Miss Bradshaw, Civil Engineering College ...	...	...	4
J. Brown Esq., Bally	...	...	20
Hon'ble C. E. Buckland, Calcutta ...	...	...	3
B. Bunckholdoz, Esq., Rampur Hat ...	...	2	12
J. M. Campbell, Esq., Byculla Club, Bombay	...	2	30
Dr. D. D. Cunningham, M.B., F.R.S., Calcutta	...	...	24
H. J. Davies, Esq.	...	...	20
G. Doveson, Esq., Calcutta	...	...	18
G. A. Gammie, Esq.	...	1	102
J. Gammie, Esq.	...	1	5
W. Graham, Esq., Calcutta ...	...	...	131
Charles Gray, Esq., Coonoor, Nilgiri Hills ...	...	3	104
Mrs. Grierson, Howrah	...	...	375
G. Barton Groves, Esq., Abu, Rajputana ...	...	1	11
A. C. Hartless, Esq., Mungpoo	...	3	51
R. L. Heinig, Esq., Khulna ..	...	...	1
Mr. Jouslain, Consul-General for France, Calcutta.	...	1	50
Dr. George King, Darjeeling	...	1	10
James Lawrie, Esq., Munshi Bazar ...	...	2	45
E. L. Sebright, Esq., Bankipore ...	...	16	400
Thomas Lee, Esq., Sibpur	...	...	46
C. Little, Esq., Calcutta	..	...	161
Mrs. R. Lyall, Calcutta	...	...	210
J. Macphail, Esq., Simultola	...	8	200
Revd. N. Madsen, Pakur	...	5	100
E. H. Man, Esq., C.I.E., Port Blair ...	1	...	40
A. C. Manuk, Esq., Mogul Hat ...	...	1	25
J. Martin, Esq., Raipur	...	1	4
James Monro, Esq., C.B., Ranaghat ...	...	4	72
E. Newton, Esq., Meerut	...	1	300
Revd. J. W. O'Connor, Purulia... ...	...	2	55
R. Pantling, Esq., Mungpoo	...	30	1,464
Revd. C. J. Palmer, Calcutta	...	...	6
G. McD. Peche, Esq., Moulmein ...	...	1	13
James Peter, Esq., Munshi Bazar ...	...	3	60

APPENDIX II—*concluded.*

To whom sent.	Wardian cases.	Boxes.	Number of plants.
1	2	3	4
Capt. E. W. Petley, Calcutta	...	...	10
W. Roberts, Esq., Sulkea Salt Golahs ...	...	...	206
Mrs. Secales, Bankura	...	6	150
Mrs. Shaw, Engineering College	...	...	329
J. S. Slater, Esq., Engineering College ...	...	...	131
Mrs. Herbert J. Smith, Barla Factory ...	...	2	26
W. M. Smith, Esq., Madhupur	...	5	106
J. T. Sinclair, Esq., Calcutta	...	1	10
The Hon'ble C. C. Stevens, C.S.I., Calcutta ...	...	...	2
Mrs. Sykes, Calcutta	...	...	12
„ Thomas, Calcutta	...	...	2
W. Trotter, Esq., Chalsa, Duars ...	...	8	200
C. H. Turner, Esq., Calcutta	...	...	58
Revd. H. Uffman, Purulia	...	11	245
S. E. Voigt, Esq., Ballygunge	...	...	20
C. Wallich, Esq., Chalauni tea estate, Mal Bazar.	...	8	200
Colonel J. Waterhouse, Calcutta ...	...	...	152
E. V. Westmacott, Esq., Calcutta ...	...	...	60
Revd. Peachy T. Wilson, Sitapur ...	...	1	12
John Wise, Esq., Jessore	..	6	560
Messrs. Bird & Co., Calcutta	...	...	400
„ Kilburn & Co., Calcutta ...	...	...	550
„ Mackillican & Co., Calcutta ...	...	6	150
„ Stanley Price & Co., Calcutta ...	...	...	80
„ Clark, Young & Co., Colombo ...	...	4	400
„ F. Sander & Co., Nurserymen, St. Albans, England.	...	7	2,800
„ James Veitch & Sons, Royal Exotic Nursery.	...	2	500
Prince Linbin, Calcutta	...	...	1
Babu Narayan Dass, Rasra	...	7	167
„ Soorjoo Deo Narayan Sing, Balegarh...	...	2	33
„ M. A. Kabir, Barabigha	...	...	150
„ B. B. Ghosh, Taki	...	...	4
„ B. L. Ghosh, Hazaribagh... ...	...	2	9
„ B. G. Lall, Siliguri	...	2	29
„ U. N. Bose, Calcutta	...	...	48
„ C. C. Bhadra, Calcutta	...	...	1
„ F. C. Pandit, Nazirganj	..	...	1
„ G. C. Datta, Sibpur	...	...	12
„ H. C Shaha, Mogul Hat ...	...	2	8
„ H. N. Dass, Garden Reach ..	...	...	4
„ H. P. Datta, Sibpur	...	...	2
„ H. S. Roy, Calcutta	...	.	8
„ J. C. Biswas, Calcutta	...	...	200
„ J. N. Mullick, Calcutta .. .	...	...	41
„ K. C. Dass, Chinsurah	...	...	7
„ K. K. Mundal, Tollygunge ...	...	...	2
„ P. C. Ghosh, Calcutta	...	...	4
„ R. B. Roy, Serampore	...	...	6
„ R. C. Mookerjee, Calcutta... ...	...	...	4
„ S. P. Chatterjee, Calcutta ...	...	...	3
„ S. P. Chowdhury, Calcutta ...	...	1	10
„ S. P. Roy, Siliguri	...	1	4
Munshi Faziulla Bhoy, Calcutta ..	...	...	110
Shaik Peer Bux, Matiabruj	...	...	2
Shama Charan Samunto, Manicktolla ...	...	...	9
Total ...	9	637	30,898

APPENDIX III.

Statement showing Seeds received from 1st April 1895 to 31st March 1896.

From whom received.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Royal Gardens, Kew, London ...	6
Directeur du Jardin Botanique, Saigon	1
Director, Royal Botanic Garden, Peradeniya, Ceylon	3
Botanic Garden, Bangalore	2
Ditto, Brisbane	46
Ditto, Buitenzorg	38
Ditto, Darjeeling	8
Ditto, Grenada	8
Ditto, British Guiana	1
Ditto, Jamaica	5
Ditto, Rockhampton	2
Ditto, Saharanpur	19
Ditto, Singapore	10
Ditto, Trinidad	1
Baron Sir Ferdinand Von Müller, K.C.M.G., F.R.S., University, Melbourne	4
Secretary, Agri-Horticultural Society of India, Calcutta	3
Superintendent, Government Horticultural Garden, Lahore	590
Superintendent, Government Horticultural Garden, Lucknow	6
Superintendent, Agri-Horticultural Society's Garden, Madras	2
Deputy Conservator of Forests, Darjeeling Division, Darjeeling	6
Deputy Opium Agent, Malwa Opium Agency, Indore..	1
Director of Land Records and Agriculture, North-Western Provinces and Oudh	17
Inspector, College of Agriculture, University of California, Berkeley, United States of America ...	11
Curator of Department of Public Instruction, Technical Education Branch, Sydney...	1
Messrs. Dammann & Co., Italy	42
„ Herb and Wulle, Italy	136
„ J. P. William Brothers, Heneratgoda, Ceylon	2
„ Reasoner Brothers, Royal Palm Nurseries, Oneco, Florida, United States of America ...	3
„ Stanley Price & Co., Calcutta	73
Hon'ble J. Buckingham, C.I.E., Sibsagar	1
Revd. J. Campbell, Manbhum	1
Dr. D. D. Cunningham, Calcutta	1
Dr. F. Franceschi, California	19
G. A. Gammie, Esq.	2
J. Gammie, Esq., Mungpoo	11
J. Sykes Gamble, Esq., Dehra-Dun	38
G. Barton Groves, Esq., Abu, Rajputana	1
M. le Docteur Edouard Hecteel, Paris	1
J. L. Lister, Esq., Pashok	2
E. H. Man, Esq., C.I.E., Port Blair	29
R. Pantling, Esq., Mungpoo	3
J. Parkes, Esq., Nimbong	5
S. E. Rita, Esq., Jowai	1
J. J. Sinclair, Esq., Calcutta	1
W. A. Talbot, Esq., Kanara	3
A. G. Tytler, Esq., Sewan	1
George Watt, Esq., M.B., C.M., C.I.E., Reporter on Economic Products to the Government of India, Calcutta	10
Total	1,177

APPENDIX IV.

Statement showing Seeds distributed from the Royal Botanic Garden during the year 1895-96.

To whom sent.	Number of parcels or packets.
W. T. Thiselton Dyer, Esq., F.R.S., C.M.G., C.I.E., Director, Royal Gardens, Kew, London ...	129
Directeur du Jardin Botanique, Saigon	9
Director, Botanic Garden, St Petersburgh, Russia ...	11
„ Royal Botanic Garden, Peradeniya, Ceylon	17
Botanic Garden, Bangalore	10
Ditto, Berlin	11
Ditto, Buitenzorg, Java	13
Ditto. Brisbane, Queensland	174
Ditto, Cambridge	11
Ditto, Darjeeling	147
Ditto, Demerara	2
Ditto, Dresden, Germany	9
Ditto, Edinburgh	13
Ditto, Glasgow	3
Ditto, Glasnevin, Dublin	12
Ditto, Grenada	7
Ditto, Hongkong	6
Ditto, Innspruck, Germany	10
Ditto, Oxford	2
Ditto, Saharanpur	19
Ditto, Singapore	21
Ditto, Trinidad	2
Director, Department of Public Gardens and Plantations, Jamaica	2
Secretary, Agri-Horticultural Society of India, Calcutta	11
Ditto, ditto, Rangoon ...	4
Superintendent, Government Gardens, Allahabad ...	8
Ditto, Government Agri-Horticultural Gardens, Lahore	4
Ditto, Government Horticultural Gardens, Lucknow	60
Ditto, Agri-Horticultural Garden, Madras ...	17
Ditto, Public Gardens, Nagpur	1
Ditto, His Highness the Nizam's Public Gardens, Hyderabad, Deccan ...	13
Ditto, Victoria Gardens, Bombay ...	17
Ditto, State Gardens, Gondal, Kathiawar ...	24
Ditto, Cossipore Practical Institution of Horti-Agriculture, Cossipore ...	1
District Engineer, Birbhum	1
Ditto, Pabna	7
Ditto, Palamau, Daltonganj ...	9
Ditto, Singhbhum	2
Executive Engineer, Balasore Division, Balasore ...	1
Ditto, Chota Nagpur Division, Ranchi	1
Ditto, Southern Shan States Division, Fort Stedman, Burma ...	14
Resident Engineer, B. G. I. P. Railway, Dhola, Kathiawar	1
Sub-Overseer, Burhi, Hazaribagh	1
Ditto, District Board, Serajganj	2
Subordinate in charge, Chakradharpur subdivision, Singhbhum	6
Subordinate in charge, Chota Nagpur Division, Burhi	1
Ditto, Hazaribagh subdivision, Hazaribagh	2
Ditto, Kendra subdivision, Kendra, Gobindpur	13
Garrison Quarter-master, Fort William, Calcutta ...	41
M. le Conservateur, Jardin Botanique, Geneve, Switzerland	9
Conservator of Forests, Central Circle, Madras ...	3
Officiating Deputy Conservator of Forests, Palamau, Daltonganj	34

APPENDIX IV—*continued.*

To whom sent.	Number of parcels or packets.
Superintendent, Central Jail, Raipur	1
Ditto, Puri Jail, Puri	1
Ditto, Noakhali Jail, Noakhali ...	1
Ditto, Temple Medical School, Patna ...	21
Divisional Forest Officer, Jerruck, Karrachi ...	2
Messrs. Dammann & Co., Italy	111
„ Herb and Wulle, Italy	171
„ H. Low & Co., Clapton Nursery, London ...	5
„ Kilburn & Co., Calcutta	1
„ F. Sander & Co., St. Albans, England ...	5
„ Reasoner Brothers, Oneco, Florida ...	5
„ Stanley Price & Co., Calcutta	66
„ J. F. William Brothers, Heneratgoda, Ceylon	1
Extra Assistant Conservator of Forests, Ajmere ...	2
Acting Imperial and Royal Austro-Hungarian Consul, Calcutta	1
Civil Surgeon, Kyaukpyu, Burma	1
Principal Forest Officer and Inspector of Agriculture, Nikosin, Cyprus	4
Manager, Khagra Estate, Court of Wards, Kishanganj, Purnea	1
The Most Noble the Marquis of Lansdowne, K.G., Bowood	9
Baron Sir Ferdinand Von Müeller, K.C.M.G., F.R.S., Melbourne	97
Field Marshall Sir Donald Stewart, G.C.B., &c., Chelsea Hospital, London	1
Professor Dr. E. Huth, Frankfort, Brandenburgh, Germany	9
Herr Graf zu Schwerin, Germany	15
Sir A. J. Arbuthnot, K.C.S.I., London	9
Lord Annesley, County Down, Ireland	1
Colonel Abbott, Abu	9
Dr. Bower, F.R.S., Glasgow	9
Dr. Campbell Brown, Liverpool	1
N. E. Brown, Esq., Kew, London	1
Surgeon-Major H. J. Barnes, Ahmednagar, Deccan ...	2
M. C. De Candolle, Geneve, Switzerland	1
Harold Baty, Esq., Seychelles, Mauritius ...	32
Revd. H. F. Corbyn, Abbottabad	182
M. Arduino Cassini, Turin, Italy	29
M. Maxime Cornu, Paris	4
Dr. F. Franceschi, California, United States of America	1
J. Sykes Gamble, Esq., Dehra-Dun	2
J. Gammie, Esq., Mungpoo	80
J. B. Gauldin, Esq., Gauhati	1
F. Hanbury, Esq., Liguria, Italy	1
F. C. Harrison, Esq., Madras	2
R. L. Heinig, Esq., Khulna	29
W. G. Head, Esq., London	2
H. Hildebrand, Esq., Shan Hills, Burma ...	4
A. C. Hartless, Esq., Mungpoo	21
W. T. Hamilton Holmes, Esq., Madras	1
James Lawrie, Esq., Manoomukh, Sylhet ...	1
T. Longmuir, Esq., Denork, St. Andrews ...	50
Revd. A. Logsdail, Chaibassa	6
Lieutenant E. I. Lugard, Shillong	1
C. Macnaughten, Esq., Rajkot	103
C. Maries, Esq., Gwalior	15
Revd. M Macnicol, Mahanadi	6
Dr. McKendrick, F.R.S., Glasgow	1
W. T. Marshall, Esq., J.P., Patterdale Hall, near Penrith, England	9
M. Naudin, Antibes, France	1
C. Noble, Esq., Sunningdale, London ...	9
R. Pantling, Esq., Mungpoo	34
Mrs. C. H. Pope, Jiaganj, Murshidadad	6

APPENDIX IV—*concluded.*

To whom sent.	Number of parcels or packets.
David Prain, Esq., Fettercairn, Scotland ...	9
Dr. Hans Schinz, Zurich, Switzerland ...	9
Colonel Scott, R. A., Calcutta	74
M. Scawen, Esq., Fort, Colombo	1
Surgeon-Major A. R. W. Sedgefield, Ghazipur ...	7
Mrs. T. A. Stewart, Aberdeen	1
W. M. Thorborn, Esq., C.S., Kurnool	3
J. T. Tyson, Esq., Pana Basti, Jalpaiguri ...	1
Dr. J. W. H. Trail, F.R.S., Aberdeen, Scotland ...	9
G. T. Wilson, Esq., London	9
M. E. Webb, Esq., Hindugalla, Ceylon	5
C. G. Welldon, Esq., Norwood, Ceylon	1
G. Marshall Woodrow, Esq., Poona	9
Mr. Byranji Edulji, Dharamtul, Assam ...	1
„ Manickji Mehrwanji, Hyderabad, Sind ...	1
„ Munchershah Matabhoy, Bombay	1
Pandit Jahar Parshad, Lahore	1
Faizel Eubhoy, Calcutta	1
Maung Po Hla, Pantanar, Burma	1
Munshi Ali Amjat Khan, Hingajiya, Sylhet ...	48
„ M. A. Alli, Sitapur	10
Sahibzada Nooroodeen Khan, Rassapagla ...	6
Babu Devendranath Basu, Sibpur	20
„ Gopal Chandra Chatterjee, Hazaribagh ...	1
„ Jadub Chandra Biswas, Calcutta ...	5
„ Jadunath Gossain, Calcutta	2
„ N. B. Dutta, Cossipore	1
„ Sasee Shakher Datta, Calcutta	1
„ T. Kanaram, B.A., Tellicherry	1
Total distributed ...	2,384

APPENDIX V.

List of Herbarium Specimens received during the year 1895-96.

	Number
The Director, Royal Garden, Kew	1,974
Dr. A. Engler, Konigl. Botanisches Museum, Berlin ...	512
J. Sykes Gamble, Esq., Dehra Dun	456
R. L. Heinig, Esq., Sunderbans	8
J. F. Duthie, Esq., Director, Botanical Survey, N. India	669
W. A. Talbot, Esq., Forest Department, Kanara ...	29
M. A. Lawson, Esq., Director, Botanical Survey, Madras	300
Surgeon-Captain D. Prain, Curator of the Herbarium	303
Baron Von Müeller, Melbourne	106
J. Medley-Wood, Esq., Natal	124
Mr. C. G. Pringle, Mexico	431
Mr. A. A. Heller, U. S. A.	344
G. M. Woodrow, Esq., College of Science, Poona ...	34
Botanische Abtheilung Naturhistorischen des K. K. Hofmuseums (K. K. Botanisches Hofcabinet). Vienna	100
Geo. V. Nash, Esq., Columbia College, New York, U.S.A.	703
Smithsonian Institution, U.S., National Museum, Washington	1,134
Director, Botanic Garden, Buitenzorg, Java ...	17
A. Colbourn, Esq., Woolhampton	1,774
Dr. Grant, Dalhousie	39
Botanical Museum, Vienna University	1,000
Dr. Hans Schinz, Direktor d. Botanischen Gardens, Zurich	558
E. de Crespigny, Esq., M.D., Crowcombe, Beckenham, Kent, England	11
Royal Botanical Museum, Berlin	1

APPENDIX V—*concluded.*

		Number.
Messrs. Kilburn & Co., Fairlie Place, Calcutta ...		5
The Director, Botanical Department, British Museum, London		1,129
J. D. Henderson, Esq., Doonagiree Tea Plantation, Ranikhet, N.-W.P.		18
Rajaba Balajee Nene, Medical Practitioner, Dolkuralee, Poona City		12
J. H. Lace, Esq., Forest Department		180
Government, Straits Settlements, Malacca ...		850
Collected Departmentally.		
E. H. Man, Esq., C.I.E., in the Andamans	257	
G. A. Gammie, Esq., Sunderbans ...	509	
J. A. Gammie, Esq., Sikkim	172	
R. Pantling, Esq., do.	3,063	
S. E. Rita, Esq., Jowai, Assam ...	3	
Abdul Kholil, Upper Burmah ...	578	4,582
Total received ...		17,403

APPENDIX VI.

List of Herbarium Specimens distributed during the year 1895-96.

		Number.
Herbarium,	Royal Garden, Kew	313
Ditto,	Imperial Garden, St. Petersburgh ...	296
Ditto,	University, Edinburgh	245
Ditto,	ditto, Florence	249
Ditto,	Madras	122
Ditto,	University, Utrecht	94
Ditto,	ditto, Upsala	330
Ditto,	ditto, Cambridge	234
Ditto,	Smithsonian Institution, Washington, United States of America ...	410
Ditto,	Singapore	445
Ditto,	Royal Museum, Berlin	679
Ditto,	Botanic Garden, Vienna	200
Ditto,	Imperial Museum, Vienna ...	332
Ditto,	Botanic Garden, Peradeniya, Ceylon ...	157
Ditto,	Jardin des Plantes, Paris	678
Ditto,	Perak	304
Ditto,	Botanical Survey of Northern India ...	630
Ditto,	Penang	248
Ditto,	University, Aberdeen	124
Ditto,	Melbourne, Australia	213
Ditto,	University, Leiden	383
Ditto,	M. C. deCandolle, Geneva ...	462
Ditto,	British Museum, London	455
Ditto,	Minneapolis, Minnesota, U.S.A. ...	105
Ditto,	Botanic Garden, Buitenzorg, Java ...	217
Ditto,	Owen's College, Manchester ...	114
Ditto,	College of Science, Poona	182
Ditto,	Friburg	359
J. Sykes Gamble, Esq., Dehra Dun ...	...	137
W. A. Talbot, Esq., Kanara ...	...	95
Botanic Garden, Natal	...	148
Herbarium, Queen's College, Cork ...	...	153
Natural History Survey, Minnesota, U.S.A.	...	246
Dr. Hans Schinz, University, Zurich ...	...	510
M. Drake de Castello, Paris ...	...	787
Professor Sargent, U.S.A. ...	...	209
G. Scott Elliott, Esq.	...	82
G. Mann, Esq., Muenchen ...	...	125
Dr. G. Watt, Calcutta	...	21
Total distributed ...		11,093

G. KING, M.B., *Brigade-Surgeon-Lieut.-Col.,*

Superintendent, Royal Botanic Garden, Calcutta.

W. M. D'O.—Reg. No. 887J—630—29-5-96.

FINANCIAL DEPARTMENT.

MISCELLANEOUS.

DARJEELING, THE 15TH JUNE 1896.

RESOLUTION—No. 182T.-F.

READ—

The Report of the Royal Botanic Garden, Calcutta, for the year 1895-96.

The season from October to March was abnormally dry, and many plants and trees perished or were damaged by the drought. Steady progress has, however, been made in improving the Botanic Garden, not only as a scientific centre for botanical students, but also as a pleasure resort for the public. Several garden roads were repaired, and the new road running from the Shalimar Point to the Garden was opened for traffic by the Public Works Department. The steps leading to Colonel Kyd's monument were renovated and paved with marble; and a cutting from the sacred *Bo* tree at Budh Gaya was presented by Mr. Grierson, late Magistrate of Howrah, and planted in the Garden.

2. Attention was as usual given to the cultivation and distribution of plants of economic value. Among these the *Sida*, a fibre-producing plant, and the *Adhatoda Vasica*, a decoction of which is popularly believed to be a powerful insecticide in tea plantations, were cultivated at the instance of the Reporter on Economic Products. The decoction of *Adhatoda Vasica* was submitted to a test, but the results are reported to have been of a somewhat doubtful nature. A portion of the Sibpur Experimental Farm was devoted to raising wheat from samples of seed supplied from the various wheat-growing districts in Bengal, and Dr. Prain, the Curator of the Herbarium, is now preparing a report on the races grown and on their relation to the names they bear in different districts.

3. The collection in the Herbarium was increased by more than 17,000 specimens, the chief contributors being the Director of the Royal Garden, Kew, and the Keeper of the Botanical Department of the National History Museum, London. Valuable sets of plants were also received from Dr. Engler (Berlin), the Botanical Museum of the University of Vienna, Dr. Hans Schinz (Zürich), Baron Von Mueller (Melbourne), the Smithsonian Institution at Washington, the Messrs. Pringle, Mr. Heller, Mr. Nash (Columbia College, New York), Mr. Man (Andaman Islands), the Government of the Straits Settlements, Mr. Sykes Gamble (Dehra Dun), Mr. Talbot (Canara), Mr. Lace (North-West Himalaya), Mr. Duthie (Botanical Survey Department, Northern India), Mr. Lawson (Botanical Survey Department, Madras), Mr. Woodrow (Botanical Survey Department, Bombay), and Mr. Gammie (Senior) of the Cinchona Plantation. Mr. Heinig, Forest Officer of the Sundarbans, and Mr. Gammie (Junior), of the Mangpuh Cinchona Plantation, contributed to the Garden valuable specimens of the flora of the Sundarbans. The native collectors employed by the Garden have also added some valuable contributions. On the other hand, a large number of specimens were sent out from the Garden to the Director of the Herbarium at Kew, the Keeper of the Botanical Department at the British Museum, the Directors of the University Herbaria at Edinburgh, Aberdeen, Cambridge, Berlin, Zürich, Florence, Vienna, Utrecht, Leyden, Upsala and Melbourne; the Botanical Survey Department, Northern India; the Smithsonian Institution, Washington; and to several other Botanical institutions.

4. During a portion of the year Dr. Prain was deputed to the wheat-growing districts of Upper India with the object of enquiring into the "host" or vehicle by which the blight affecting wheat and barley, commonly known as "rust," is propagated from year to year. The matter is one of the utmost importance, and it is hoped that Dr. Prain's investigations may render it

possible to take effective measures for the prevention of these destructive blights.

5. During the year two volumes were added to the interesting series of Garden Annals, containing monographs by Sir Joseph D. Hooker on Indian Orchids and by Dr. D. D. Cunningham on the obscure phenomena known as sleep and sensitivity in plants, most of which he traces to purely physical processes. Both Dr. King and Dr. Prain also contributed valuable papers on botanical subjects to various scientific journals.

6. The Lloyd Botanic Garden at Darjeeling was in charge of Mr. Kennedy, who carried out various improvements in the roads and conservatories of the Garden. A gigantic specimen of the beautiful Australian fern *Todea Barbara*, weighing upwards of half a ton, was presented to the Garden by the distinguished botanist Baron Von Mueller, K.C.M.G., F.R.S. The attention of Dr. King is called to paragraph 3 of the Resolution on last year's report.

7. The thanks of the Lieutenant-Governor are again due to Dr. King, the Superintendent, and Dr. Prain, the Curator of the Herbarium, for their successful administration of the Garden during the year.

By order of the Lieutenant-Governor of Bengal,

H. H. RISLEY,

Secretary to the Govt. of Bengal.

No. 3328Mis.

Copy forwarded to the Superintendent of the Royal Botanic Garden, Calcutta, for information.

By order of the Lieutenant-Governor of Bengal,

B. FOLEY,

Under-Secretary to the Govt. of Bengal.

Calcutta,
The 17th June 1896.

B. D'R.—Reg. No. 1397C—664—17-6-96.